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# MAIN CURRENTS

## IN MODERN THOUGHT

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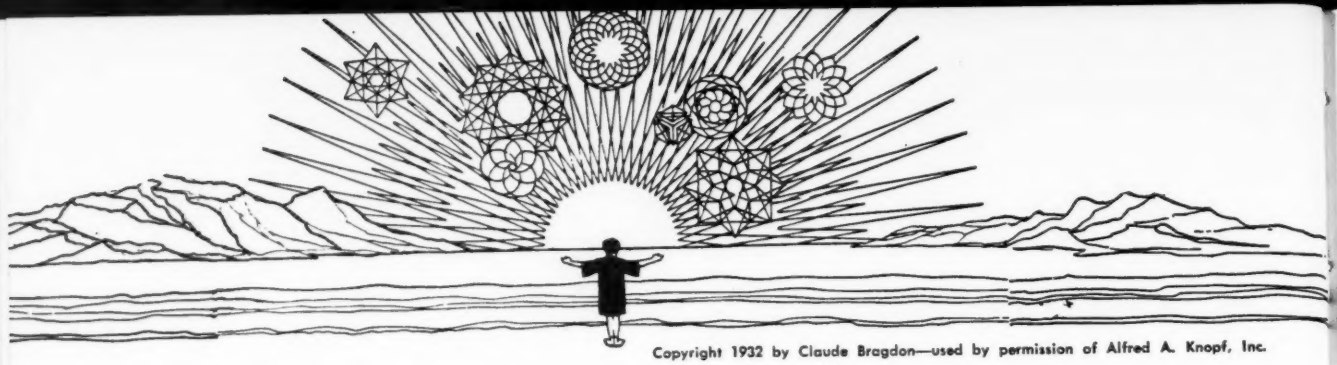

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The cover shows a Siva-Nataraja bronze from South India, courtesy of the Indian Government Trade Center.

EDITOR: F. L. KUNZ
ASSOCIATE EDITOR: E. B. SELLON
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PUBLISHER: JULIUS STULMAN

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# HUMAN VALUES IN A NON-TECHNICAL CULTURE

William Henry Harris

Southern Illinois University

## The Challenge and the Contribution of an Old Culture

THE impact of science and technology upon our values is twofold. Science and technology have made available to us in the modern West goods which non-technological cultures do not have. And science is offered to us as the method for determining our choices among values.

If we were judging only whether our own modern Western culture is superior in its goods to past and possible future Western cultures, and if we were questioning only whether science gives us the criteria for this judgment, we would face a grave problem indeed. But our problem is even more acute. For the first time we are really challenged by highly developed non-Western cultures which are free to affect us and to determine their own destinies. In past ages we selected the areas of contact with these cultures and when cultural conflict did arise we were powerful enough to dictate the results. Today, due both to internal movements for the revival of the non-Western cultures, and to the fruition of Western technology, our contact must necessarily be a different one.

The culture of India is a particularly useful one to study as an example of this challenge. India has a new government which is vigorously free and progressive. It is self-consciously proud of a classical culture which has not only survived but is impressively renascent. This culture has had an influence upon Asia comparable to the influence on the West of Greece and Palestine combined. India has had a contact with modern Western culture, particularly as it is expressed in capitalism and imperialism, which has left many Indians profoundly disenchanted.

Let us begin by examining the values held in traditional Indian society. Together with this we shall indicate how these values came to be accepted and why they are being defended against the impact of Western culture. Finally we shall make a few suggestions as to how friction between technological and non-technological cultures might be reduced and what the West can learn from this contact.

— II —

THERE are four traditional *purusharthas* (values, "ends of the self") in Indian philosophy. These are *artha, kama, dharma,* and *moksha.* It is usually held that this represents their order of increasing importance.

*Artha* is economic value and refers to all material possessions. The assumption in the West that Hindu thought is wholly world-denying is quite mistaken. It ignores the plurality of systems in Indian philosophy. It ignores the varied roles which different values play in the several vocations and stages of life. And it draws its data from a decadent period of Indian history, one in which Hindu society had suffered successive shocks from Moslem invaders and Western colonialism.

The point which Hindu thought insists upon in regard to material possessions is that we should possess them rather than allow them to possess us. A familiar expression of this idea is Sri Ramakrishna's story of the holy man who lost his soul for a tiny piece of cloth.[1] Irritated because rats ate up his freshly laundered loincloth, his only garment, a young holy man begged a cat to kill the rats. He had to get a cow to supply milk for the cat and had to raise some hay to feed the cow. One thing led to another. When at last his teacher came to check upon his progress he was a rich and harried landowner with a wife and many servants—"All for the sake of a loincloth!"

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*Dharma* comprises the whole context of moral, social, and religious duties. These duties are regarded in India as a debt contracted through coming into existence in the community and remaining in it as a member. The debt is to be paid to the gods who protect and favor us, the ancestors to whom we owe our

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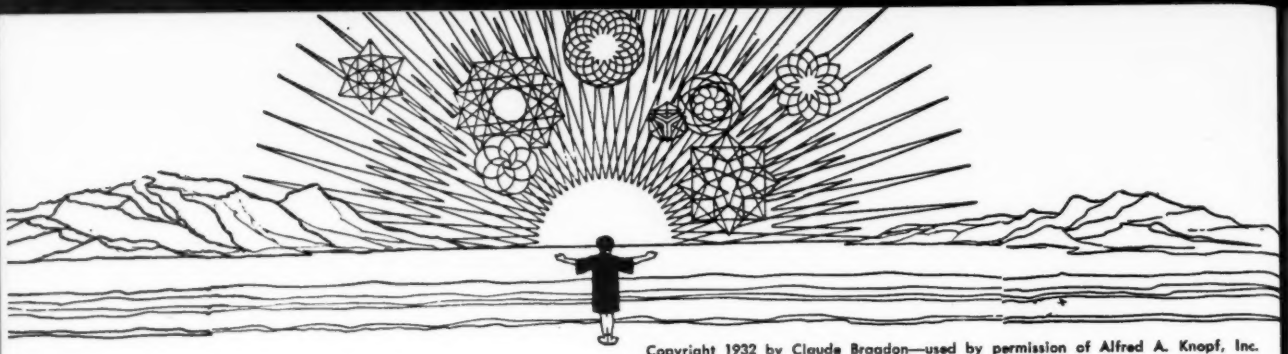

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existence, our fellow creatures with whom we share life's joys and sorrows.[2] This organic conception of society is familiar to readers of Edmund Burke's *Reflections on the Revolution in France* or Plato's *Crito*.

A great deal of the tolerance which usually characterizes the Indian outlook can be traced to the concept of vocation, which is so important an element of the *dharma*. Each person is born into a certain station with certain duties. This station and these duties will be modified as a person goes through the different ages of his life. During earlier and happier periods of Indian history the idea of caste clearly had a vocational and functional meaning. Each vocation was needed and honored. While each son was normally trained within the joint-family to carry on his father's vocation with all the unique skills preserved within the family, frequent instances of social mobility can be observed. A number of quotations could be assembled to show that thoughtful men of all ages tried to relate caste to vocation and character, and not simply to birth. In the great Hindu epic, the *Mahabharata,* we read: "Truth, charity, forgiveness, good conduct, gentleness, austerity, and mercy, where these are seen, he is called a Brahman. If these characteristics are found in a Shudra [worker] and not in a twice born, the Shudra is not a Shudra and the Brahman is not a Brahman. Where this conduct is shown he is called a Brahman; where this is not, he should be regarded as a Shudra."[3]

The highest caste, the Brahman, is under the burden of *noblesse oblige*. An act of moral irresponsibility on a Brahman's part will be much more condemned than it would be in a person of any other caste. It should also be carefully noted that a Brahman is in no sense necessarily among the wealthier members of a community. His rewards are in terms of respect and status. He is expected to be a man of learning and spiritual discernment.

Not only are different values to be sought by members of different social groups, but different values are appropriate to different stages in life. This is not easy for us to comprehend in the modern West for we have been shaped by a predominantly materialistic and hedonistic culture. A hedonistic culture must idolize youth, for it is youth whose senses are most efficient and easily titillated. If the primary, perhaps the only, values in life are those experienced through the senses, then growing old is a tragedy which must be averted by every resource of physical and psychological rejuvenation. The effects of this are seen upon the old who frantically seek to avoid maturity. The effects are seen upon the young who with equal frenzy try to get it all before it is too late. Juvenile delinquency in all Western countries has become a problem far more intense than the ordinary difficulties of growing up. Geriatrics is not only a new science; it had to be invented to cope with a problem which never existed in such intensity in any other country.

Hindu philosophy has traditionally held that life goes through four stages (*ashramas*). Each stage has peculiar duties and peculiar values to be enjoyed.

The first stage after early childhood is the *brahmacharya,* a word which interestingly means both student and celibate. During this stage the student, without distractions of family or other social involvement, goes to live in the household of his teacher. Here he learns the classic literature and the arts of interpreting it.

In the next stage he becomes a householder (*grihastha*). It is assumed that a person will ordinarily spend most of his life as a husband, father, a business man or farmer. But when a person's hair begins to turn white his mind begins to turn to serious questions of philosophy and religion. This is called the *vanaprastha* stage and reveals the contrast in values assigned to the village (*grama*) and the country (or forest, *vana*). Routine duties appropriate to one's vocation may be carried on in the town, but the "Culture of Cities" is inappropriate to that immersion in introspection and the rhythms of nature which is needed for full spiritual development. At this stage in life one leaves the problems of business to the younger members of the family and retires, often to the forest or mountains. The response of many American women to Anne Lindbergh's *The Gift From the Sea* reveals that this need is often sensed in the West. John P. Marquand's *The Point Of No Return* is one of the many poignant pictures of how difficult it is to acquire this freedom in a highly technological culture. The football alumnus and the Helen Hokinson clubwoman are more typical among us than is the conscious cultivation of the values of maturity.

The fruit of retirement is salvation (*moksha*), the fourth value in life. This culmination of self-discovery and communion with God may be achieved by a person of any caste and at any age, but ordinarily it is not expected that one should become a *sannyasin,* a released one, until the later years of his life.

These ideal life stages are of course not followed by all Indians. But it is an ideal, understood, appreciated, and actually influencing the way their lives are carried on. Conversation with many an Indian business man reveals that he has the dream of a little place in the country, not as a place to play, but as a place to pray. This is of course often a sentimental pose, but it is also often deep and real. This ideal in its contrast to the dream of shuffle board in Florida is an interesting and definitive cultural distinction.

Salvation, the highest value (*paramartha*) of Hindu culture, is release from the manyness of the things that are and immersion into Being itself. It is release from the many petty selves, or the roles that each of us play, into the Real, Integrated Self which each of us longs for and dimly intuits but can never seem to achieve. In the achievement of this selfhood, disci-

[2] Cf. Heinrich Zimmer, *Philosophies of India,* London: Routledge and Kegan Paul, 1951. p. 35n.

[3] Quoted by M. Yamunacharya in "The Concept of Dharma and Its Implications to the New Society," *Proceedings of the Twenty-eighth Indian Philosophical Congress* (Baroda, 1953), p. 41.

pline and even stern renunciation of one's lesser selves is necessary. But here Hindu thought is often greatly misunderstood. It is only in its grotesquely distorted forms that asceticism becomes an end in itself. Humaneness and instrumental discipline are characteristic of the great teachers of all world religions.

Hindu *moksha* is not only characterized by a feeling of release but by a sense of harmony between the self and the natural and social order. *Atman,* that truest self which we intuit within ourselves, is realized to be *Brahman,* the object of ultimate worth-ship, the essence of all Reality. Negation is negated. We see through the either-or-ness of life and affirm all of Reality. Those contrasts between night and day, rich and poor, male and female, life and death, are seen to be simply rhythms within the Universal Harmony. No longer analyzing, choosing, denying, one can give himself over to the healing of those who still bleed from the contradictions of life.

— III —

LET us now turn to the question: How did these values come to be accepted as the basic values of Hindu culture? It is possible that some of them would continue to be maintained after a scientific study of the possibilities of human existence. But it is obvious that they were not derived from the application of scientific method, nor is this the common basis for their defense today. On the other hand, we need not conclude that the values of Hindu culture are accepted only on the basis of superstition or uncritical authority. There may be other sources of human values.

The basic values of Hindu culture are validated through two kinds of reflective activity. One is highly developed introspection; the other is sensitive attunement to the rhythms of nature. In the West we know Yoga, which is what we have in mind when we speak of highly developed introspection, as a bizarre form of physical culture or a preoccupation with the occult. It is neither. Its goal is spiritual attunement. And to refute another common misconception, this does not necessarily mean the obliteration of all conscious selfhood. Although some Hindu schools seem to teach this, there are great differences among the philosophical interpretations of mystical experience. As for the attunement with the rhythms of nature, this may be due in part to the warm climate and the village and joint-family social institutions. In any case, even in the middle of the twentieth century Indians are simply not insulated from weather, from biology, from human emotions, as we are in the modern West. Thus we can see that their values are reflections of such natural facts as individual differences, growing older, and the fecundity and destructiveness of nature.

— IV —

OUR present contact with Asian cultures is a challenge to the West far more profound than even the most sensitive students of world affairs usually recognize. There is an unconscious spiritual imperialism in the assumption that the revolutions now taking place in Asia are simply for a larger share of material goods, and for the right to self-government on some Western model.

A better statement of the present challenge has been made by Charles Frankel in his recent book *The Case For Modern Man,* although he passes from his statement to give an unmitigated defense of modern Western culture. Frankel says: "Our present search for a universal point of view toward history, then, is nothing new. Western historians and students of society have been trying, deliberately and for a long time, to look at history and human behavior from such a point of view. But they have thought this universal, neutral point of view was supplied by the categories and canons of scientific methods; and it is these very methods which are now being rejected by current philosophers of history as parochial and 'merely Western.' The most sympathetic anthropologist, arguing for the right of a 'native' culture to be different, would never have imagined that the members of this culture could study *him* or *his* culture and arrive at reliable conclusions without using his methods. We may not have believed that we were the masters of all wisdom; but we did at least think that Western society was the school at which all men could learn rational methods of inquiry. We did not think that our fundamental intellectual methods were culturally limited in their validity. But this is precisely what we are asked to believe now. Our most fundamental conceptions of sound reasoning and sound argument are under suspicion."[4]

In a later passage defending his "damn-the-torpedos-full-speed-ahead" position, Frankel asserts that when we criticize science for being provincial, "we reject the one language which has been able effectively to cross boundaries and to draw men together. In the simplest terms, the only effective world community that now exists is the community of science."[5] But is it really a derogation of science to observe that a lively sense of community seems to unite mystics of all faiths, as well as devotees of music and even weight-lifting? Science may be only one of several important ways in which parochialism is overcome and mutual understanding is increased. Science may not be the *only* rational method of determining our choices among values.

Going further than this, many Indian thinkers would argue that applications of science in technology make it difficult to discover and maintain those values unique to Hindu culture. For instance, let us contrast the order of values in the West, particularly in the United States—the epitome and perhaps the *reductio ad absurdum* of Western tendencies. The heroes of contemporary American culture are the young and the successful, not the old and the wise. They are

[4] Charles Frankel, *The Case For Modern Man,* New York: Harper, 1955, pp. 18-19.
[5] *Ibid.,* p. 143.

not those who have been marked by exceptional moral discipline or insight into the meaning of life. The soldier and the movie star stand in sharp contrast to Vinoba Bhave and Mahatma Gandhi.

We have said that the highest value in Hindu philosophy is *moksha,* which we have defined as the discovery of our Real Self amid the diversity and frequent contradiction of the roles each of us plays. Nothing, of course, has had any greater tendency to shatter the person into a multitude of selves than has the growth of urban, technological society. Let us leave out of account the "economic man," the "iron law of wages," and the "dark, satanic mills" which have been historical but unforgivably unnecessary by-products of the Industrial Revolution. Aside from this, there seems to be essentially involved in urban, technological society at its best some tendency to disintegrate personality. It robs us of introspection and contact with the rhythms of nature. It encourages us to develop one self in relation to those who know us only at work; it encourages us to develop another self in relation to those who know us only as we commute; it encourages us to develop another self in relation to those who know us only at play; it encourages us to develop still another self in relation to our family.

The amusements of technological society do not recreate the person; they foster his mindless disintegration. Such solitary vices as spectator football, spectator movies, spectator magazines, and spectator television give us effortless identification with first one and then another hero. Each further weakens our sense of who we ourselves are. Each further fosters the superstition that life can be predicted and endlessly manipulated if we have the right method, the right slogan, the right gadget, the omnicompetent leader. Each deepens our resentment of differentness, of the tragi-comic incongruities of life, and of the men who remind us of the existence of such things.

We smile at the child who this morning was Hopalong Cassidy, this afternon a space cadet, who tomorrow will be a doctor or a fireman. But what man in the urban West is not really Walter Mitty at heart? What Mrs. Walter Mitty is not Marilyn Monroe, the girl in the Revlon ad, and the heroine of "Secret Storm" and "Valiant Lady," all in the course of a single afternoon? From the perspective of Western Europe the late Emmanuel Mounier has given us a graphic summary: "I meet with what appear to be superimposed sketches of my personality, personages I possess, sprung from the union of my temperament and my caprice, often remaining in mind or coming up unexpectedly; personages I was, surviving through inertia or else laxity; personages I believe I am either because I envy them, or utter them or allow them to impress themselves upon me in my moods; personages I should wish to be, which assure me of a good conscience because I believe I am they. Now one, now the other dominates over me. And none is stranger to me, for each embodies a flame taken from the invisible fire that burns within me. And yet each of them is an escape for me from that hidden inner fire which might illuminate their little histories and dispel all their little selfishnesses."[6] Capitalist "individualism" and Communist or Fascist collectivism are spiritual cousins. All are descendants of the Industrial Revolution. Each in its own way offers some threat to the integrity of the person. Existentialism, McCarthyist fanaticisms, and the massive recrudescence of "the old-time religion" are symptoms (on different levels of significance, of course) of deep cravings for the authentic Personhood drained from us by that technology of which we boast as our highest cultural achievement.

Indeed there are important things about human values which we can learn from the non-technological cultures of Asia. Even if there were not a lesson for us in our contact with them, we would still need to study their values closely in order to live in the same world with Asian people. Our curiosity about Asia has been slow to develop; our respect is even less developed. When we have felt the need to know about Asia we have usually called upon the social scientist or the "social engineer" of the most unimaginative sort. We have done great good, but our unawareness has often alienated those we have helped the most.

This plea for the development of respect for cultural uniqueness is not a denial of universal values. Our criticism of some of the values of technology implies some objective standpoint from which values may be evaluted. The point is: science is not the only kind of rationality. Valuable as it is, as much as it contributes to the understanding of ourselves and the enrichment of our values, it is one of several significant but fallible, culturally conditioned instruments. Our values must be enriched by the other humanities. For science is one of the humanities, one of the most important ones, whether scientists always recognize it or not. The greatest scientists usually do. The values science presupposes, such as objectivity, simplicity, and order, are also ethical and aesthetic values. Science has made its greatest advance when the concept of revelation has been abolished from its work of inquiry. Despite the iniquities which have sometimes attended technology, pure science is one of the noblest fruits of the human spirit.

There is no place where the humanities have more to contribute to the practical work of building a better world than they do in increasing our understanding of non-technological cultures. Many of these cultures are rich in literature, art, and philosophy. Only those approaches to experience which cultivate introspection and sensitivity to the rhythms of nature can bring us to a full understanding of them and enable us to communicate our own values to them. Perhaps in the creative interchange we ourselves will gain new insights and we can move together toward values which are truly universal.

[6] Emmanuel Mounier, *A Personalist Manifesto,* New York: Longmans Green, 1938. pp. 74-75.

# SOCIAL DYNAMICS

John Lindberg

## A United Nations Economic Advisor (1950-54) Assesses This Instrument of Social Synthesis

IT is right that social science should reflect the concerns and temper of its own age. Nevertheless, it cannot claim to be merely a mirror of its environment. Whether or not its results are "true," it cannot help influencing social behavior and, thus, in the last instance, society itself. Theory is part of the complex of forces that affects development, and it must share responsibility for things as they are.

In spite of rapid progress in the several branches of social studies, it is obvious that contemporary theory has failed to integrate them and, thus, meaningfully to interpret social experience in its entirety. It remains silent on many of the questions that most persistently puzzle the modern mind. The dilemma of social science is intimately connected with the more general crisis of meaning in the modern world.

Consider the factors which tend to retard—if not altogether arrest—the adjustment of social theory to the new realities of social life. Which are the reasons for the lack of integrating impulse and for the growth of confining departmentalization? Why does it lag behind the natural sciences in intellectual boldness and in popular esteem? The answers may come more simply if we reverse the order and ask how it came about that the natural sciences measured up to the challenge of the times.

Not so long ago the natural sciences faced a similar dilemma. An immense accumulation of fresh data and observations could not be reconciled with existing theories and "natural laws," and the result was that old concepts had to be scrapped, and new theoretical models built on higher levels of generality and abstraction. The new models did not pretend to represent the eternal verities; they were frankly expendable tools to be modified or discarded when they had outlived their usefulness. The experimental mood of the natural sciences led them to imagine a physical universe that is airy beyond the dreams of the old metaphysicians.

The escape from the common sense universe represents—as shown by Whitehead and others—the inwardness of science. It was an adventure that would have ended in disaster if the results had not justified the assumption that there exists in the natural universe a lawful order discoverable by Reason. This assumption could not, and cannot, be proved; it had, and has, to be accepted on faith. It arose, not as a scientific, but as a religious intuition; long neglected by its discoverers, it was rescued and made the cornerstone in the modern edifice of science.

Impressed by these successes the social sciences have, of late, become imitative; but of the letter, rather than the spirit of science. Hence, in spite of the impressive modernization of the facade, the interior is still furnished with outmoded rationalist postulates. Modern social sciences were created during, or soon after, the Age of Enlightenment, and they remain essentially typical eighteenth century products.

In hindsight, Enlightenment (and its direct continuations in Victorianism and Marxism) appears as a curious episode in the history of ideas. It imagined that in Europe mankind had reached a plateau of safety and would thenceforward climb ever higher peaks of perfection, felicity, and, added Gibbon prudently, perhaps virtue. Social survival was no longer regarded as an achievement requiring effort, for it had become an axiom.

The intellectual structure of Enlightenment collapsed rather soon; many of its favorite notions, however, lived on in subconscious attitudes and silent assumptions. It was very generally believed that social reality was divisible into a number of "problems," each of which had "solutions" which could be found by men of good will. Faith in automatic and inevitable social survival remained the most characteristic trait of the Age of Optimism that lasted, by and large, until it received its *coup de grace* in the Second World War.

On the surface, it may be thought that the Age of Optimism has been followed by the Age of Despair. The change in mental climate, however, still only affects a vocal minority. It takes time for such a shift to penetrate the collective subconscious that remains in the grip of more powerful images.

Enlightenment myths have found a home for old age in the institutions that they helped to create and ensoul. Amongst these the most hospitable have proved to be the social sciences. The archaic nature of such myths does not prevent them from serving as roadblocks in the path of scientific advance. There

remain to this day large groups of relevant social data that have been unable to find a place in social science. The failure to deal with these data seriously, in spite of their obvious importance, shows how capable the dead hand of Enlightenment still is to arrest the growth of an integrated social theory.

ON the map of scientific knowledge, data related to the phenomena of religion, belief, moral-formation, theory of value, and the nature of the social consciousness are noted and catalogued by several branches of the social studies: history, anthropology, comparative religion, psychology, among others. In spite of the contribution to the understanding of these phenomena, made in particular by psychology and comparative religion, they have not found place in a general social theory. Speaking from the viewpoint, not of reality, but of the social sciences, the presence, or the absence, of these phenomena would not essentially affect the picture of society as an operative entity, as they have no functional place in the social system.

Strange as it must appear, it is difficult to avoid the conclusion that some social students feel that even the data relating to these phenomena have become infected by the disrepute in which the phenomena themselves are held. They are not given the objective status of, for example, statistics of production and prices. The non-material fabric of society seems to be made of the stuff that dreams were thought to be made on until they were restored to respectability by Freud and his followers. Even otherwise sophisticated students of society pretend to believe that the non-material variables in the social equations are matters of indifference, delusion, personal taste, or arbitrary invention. This large field of human experience is thought of as if it lay outside the dominion of necessity and lawful order which rules practically everywhere else.

Another field of studied ignorance pertains to the phenomena of war. In no field has western thought remained more underdeveloped. Thus, some students say that war is "caused" by the existence of a society of sovereign states in the same way, one fancies, they would say that death is "caused" by life. Other students keep busy compiling lists of separate "causes" of war. As in Aristotelian medicine each patient was considered an *unicum,* so is each war explained by special reference to the catalog of *ad hoc* "causes." We encounter all the ambiguities that follow on false premises. Thus, among the "causes" of war we find in prominent place the several weaknesses of human nature such as ambition, greed and cruelty. Wars are caused by guilty and suffered by innocent parties. A peculiar stain of original sin attaches to selected individuals, classes, nations, constitutions, or ideologies, whose very existence constitutes a threat to peace. While social theory takes such notions seriously, the study of war will remain in the domain of frivolous propaganda. Even the beginnings of a functional analysis of war in terms of the society of states as a whole are now lacking.

The third area of significant neglect relates to the process of social growth. Old-fashioned materialists used to equate progress with increase in territory, population, production, and so on. But if social progress is certain, whatever we do, any criterion of change should also be one of progress. At any rate, if progress is certain, why worry? It is not surprising, therefore, to find that the West (except for Marxism) has not formulated any theory of social growth. Yet, paradoxically, the great powers are now attempting to replace armed conquest and colonialism with free technical and economic "aid" to the "underdeveloped" peoples of Asia and Africa. This experiment implies that it is desirable and possible to replace inevitable progress by an "artificially" induced process of imitative social change.

Habit makes one blind. One is nevertheless unable to refrain from asking how it is possible for the able fraternity of social students to put up with a situation that even laymen find frustrating. In the purely formal sense, it can be said that where the natural sciences responded to the accumulation of contradictory data with generalization and abstraction, the social sciences responded with specialization and concentration. The field of study was cut up into uncoordinated areas in which narrow professional workers were free to make their own assumptions. Specialization is in itself necessary and desirable, and valid work is done within the branches of study. A confining departmentalization arises only when integrating activities are brought to a standstill. As long as students remain within their own field of "competency" and loyally close their eyes to what goes on on the other side of the fence, the illusion of intellectual consistency is possible to maintain. The only apparent measure of the cost of the mental isolationism is the increase in "displaced facts" for which nobody is willing to assume responsibility. But as long as nobody presumes to speak in the name of the whole, one can pretend that order reigns in the great anarchy of social sciences.

IN order to give a useful answer to the questions raised, it is necessary to grasp how radical is the challenge of the changing social reality to social theory. The social universe is even more elusive than the natural one. The role of objective observer comes with greater effort. There are forces opposing change in social theory that are absent in natural theory.

Consider the relation between observer and the field observed. The student of nature generally finds small difficulty in maintaining an objective relationship between himself and the phenomena he studies, except for a limited "observer effect." The student whose field of observation is society, however, is himself an integral, sentient part of the field of observation and can only exceptionally be assumed to be indifferent to social phenomena.

Society will stand for only so much nonsense. It

reacts, in what is considered to be legitimate self-defence, against hostile elements. No theory of academic freedom has prevented governments from trying to protect themselves against what they conceive to be subversion. It is difficult, if not impossible, to foresee the effects of even apparently minor changes in social theory, and governments have rarely been wrong in following Aristotle's advice to resist such change in its beginnings. Officials of legitimate governments are aware of how slight a pressure is needed to keep even a great multitude in order. The more successfully are instilled the virtues of conformity, of loyalty, of respect for pastors and rulers, and of firm faith in the supreme value of material rewards and conventional standards of living, the smaller is the effort of government.

Again quoting Aristotle, man is a social animal. He is so intimately a part of society that it would take almost a miracle to make him aware how dependent he is on society and how deeply it has stamped him with its own image. His ideals, outlook, subconscious attitudes, and even his powers of observation are conditioned by education. Feelings of warmth and security grow from the consciousness of belonging with the group. Unhappiness—the root of most asocial behavior—stems from the individual's lack of integration into group life. The natural man tries, even by violence, to achieve new integration when an old one is disturbed. He changes friends, party, church, and country. He dreams up a new social order that he imagines would suit him better, and he becomes a revolutionary. But he cannot imagine himself outside some particularist scale of values, and thus regard all with the same objectivity. This, of course, is a way of saying that man's relation to the social environment is subjective and emotional rather than objective and factual. We begin to perceive how difficult it would really be to observe social events as we do natural events. The greatest obstacles to objectivity emanate from within the students themselves.

Hence, in spite of the earnest talk about scientific method in the social sciences, the difficulty of reaching even the semblance of objective detachment in respect to the data observed is so great that one does not feel like contradicting the natural scientists who maintain that there exists no social "science" in the strict sense of this word. We observed in the foregoing that the basic assumption of science originated as a religious intuition. Considering what the scientific attitude towards social phenomena would really imply, it is becoming apparent that it too, in its turn, would carry into what has been generally understood as the sphere of religious experience. The backwardness and inconsistency of social science seem natural, almost inevitable, if we really visualize the demanding nature of social objectivity. The leap in consciousness required by the serious student of society as process can be compared only to the enlightenment of the great religious innovators of the past. It is not an attitude to be acquired by a simple act of will or taught at any university.

Without considering the functions and nature of the religious innovators, it can be noted in passing that it would appear natural that the great civilizations grew up around their teachings, for they were the first (and perhaps only) men who achieved objective social insights. They transcended their natural loyalties to the world or a particular social order or relationship; they therefore were free to create afresh out of the unfolding requirements of life. Their common objectivity towards merely temporal events helps to explain why the great innovators are so similar in their teachings about society. At an objective level, it becomes absurd to separate social vision from social creation. Set against the particular, the universal assumes the nature of a principle of change—the dynamic stirring in what is.

It is difficult not to observe that the twentieth century has become one of bitter partisanship, and that it has revived, on a rather large scale, the old customs of punishing people because of opinion, creed, party, or race. This does not mean that the present generation is morally inferior to those immediately preceding; it simply means that we are in a more critical social situation, where responsible statesmen feel that they cannot afford as great a latitude for individual deviations as during the nineteenth century. The present conflict between opposing blocs of nations and ideologies makes it impossible to tolerate full objectivity in social and political matters. The fear of objectivity and reason feeds on the inevitable attempts of the particularist systems to secure their own survival, even at the risk of total global destruction. The great progress in the military arts, and the permanent state of international hostility that cannot any longer find its natural outlet in open war, have resulted in a nervous tension that finds its main release in verbal violence and wakeful intolerance. Diplomacy is becoming a forgotten art. The attitudes actually required for social survival are just opposite to those being fostered by responsible governments everywhere. The outlook for survival seems far from bright.

IT would be irrational, however, to adopt as working hypotheses assumptions which imply the non-survival of civilization, for that would render most action perfectly futile. Even if one is obliged to take a dim view of the will and the power of a particularist system to renew itself, this does not mean that society is doomed. In spite of all attempts to close it, the social universe remains open and creative. It is still the unforeseen, the unforeseeable, and the improbable that most often happens. The obvious absurdity and futility of a system of separate states in a civilization that has long ago outgrown the parochial (to borrow Toynbee's phrase) contains many corrective elements. A change in human consciousness—as irresistible as it is untouchable by responsible governments—may create a new situation. The unlikeliness and strangeness

of such an idea may be caused mainly by our ignorance of the energies and processes involved.

When we turn from the present ruling elements we move into a more bracing moral climate. Perspectives change. There are several other possible impulses toward unity. The creative minorities everywhere—and not least amongst the "underdeveloped" nations—signal a change in the collective subconscious. Peoples, on the whole, perform as usual, but they listen more attentively and less emotionally to the utterances of statesmen. There is the presentiment, not so much of a great catastrophe, as of the end of an age. As during the closing period of of the Roman Empire, the people looks into itself in search for the new age.

History shows that racial growth and rebirth take place first in the consciousness. What we, during the Age of Optimism, were taught to consider the vital "problems" of mankind are never "solved"; they are dissolved in the broad displacement of the collective consciousness, presented under such titles as the Spirit of the Age, or Historical Necessity. This has largely occurred in respect to many "problems" of race and class. It may occur in respect to the "problem" of nationalism. It is possible that the twentieth century will experience the birth of a universal consciousness to take over the creative role that nationalism occupied during the nineteenth century.

We are, on the whole, remarkably ignorant as regards phenomena that pertain to the collective states of consciousness. But both reason and emotion tell us that to the onrushnng wave of disaster we must oppose an act of faith. We must affirm, not out of "idealism" but as a practical working hypothesis, that we are free to choose truth rather than falsehood, love rather than hate, and the universal rather than the particular. In its most general aspect this affirmation is an element in the process of social creation.

Social theory, as understood in its most general sense and liberated from academic inhibitions, includes man's ideas and images of social nature. It is a greater force than we are aware of. If, by whatever means, it may prove possible to create the conditions necessary for social survival, it is inevitable that such salvation will imply an operative theory of society considered in its totality. To put it differently, the social sciences must cleanse themselves of Enlightenment superstitions, and consciously focus upon the development of a new social synthesis.

LET us consider some of the problems which the student encounters in the search for a new intellectual focus. We are aware that the great tradition is concerned with the ways in which societies are able to survive in spite of man's violence and nature's hostility. This concern, more than anything else, created the master symbols of civilization, those archetypes which were denied, but not destroyed, during the Age of Optimism. An effort to return to basic social concerns, independent of the tradition, cannot but involve some disturbing reactions, and an anxiety lest the forward movement might in reality be but a return to the sources of the past. In actuality, however, such a return is impossible, for mechanisms of irreversibility guard the historical continuity in social history.

Even if some master-mind had constructed a social theory that perfectly fitted the situation at a given time and place, it could not help affecting people's behavior and thus rendering itself imperfect. In order to catch up with reality it would have to be modified endlessly. Since previous theory must become the object of later theory, there arises what corresponds to a greatly magnified "observer effect." This relationship between theory and reality necessitates what I have called the introspection of theory: it obliges relevant social theory to become a historical *continuum*. It prevents it from returning into itself. The more the student realizes the creative impact of social theory, the more clearly he sees the difference between natural and social science.

The relativity of the social sciences goes back to the same process. No particular theory can explain more than one particular situation. This has created the illusion that everything is relative. In reality, everything occurs according to law; one opinion is not as good as any other. But in order to understand the nature of social individualization, the student must also—and more painfully—familiarize himself with the special relationships that exist between social statics and social dynamics.

THE limitations of the human mind seem to be such that it requires the aid of static concepts to interpret the manifold aspects of an ever-changing world of phenomena. The demand upon us is for an understanding of continuity, but the mind seems unable to visualize it except in the form of equilibria (or systems of balance), even if these are unstable and ever-changing. The function of social statics thus becomes a formal one: to represent the nature of *any* static equilibrium and hence the lasting conditions for social survival. General theory therefore must be constructed on a level of abstraction high enough to apply to any society. In other words, it must account for the minimum, or primary, functions of survival, showing how balance is maintained and restored, in spite of all shocks and disturbances, as it moves through time. Without getting involved in details, construction of the general equilibrium necessitates a redefinition of basic social units: the basic unit of an advanced social theory is the social event, and the social equilibrium actually deals with pattern of social habit. The higher level of abstraction, however, is more easily understood than the fact that the equilibrium is itself what is technically known as dynamic. Social dynamics, properly speaking, deals with how the equilibria themselves are modified and with the movement from one equilibrium to another.

As long as scholars assume social survival to be automatic and inevitable, they cannot feel any need for a theory of social statics. The neglect of basic

social theory is possible for a relatively long time. Rome was not destroyed in one day, and actual behavior is as much guided by subconscious patterns as by intellectual notions. But according to this view, no society could have reached a higher level of achievement without the aid of concepts developed through conscious social theory. The concepts may have been confined to a small minority, and only with time become generally implicit in attitudes and habits. It is therefore important to this hypothesis that a previous theory of statics exists in tradition. To the western reader the most familiar construct of general equilibrium is contained in Plato's *Republic*. The platonic concept of justice is one of social equilibrium. The primary social functions (those of production, reproduction, defense and order) are represented by the four classes (those of guardians, soldiers, producers, and the community of women and children) and survival follows when each of the classes performs its appointed task well. The construct as a whole is, of course, more subtle than can be be indicated here. It should be added, however, that Plato shows how the outer survival conditions cannot be knit into a stable equilibrium unless it is supplemented by a correlated system of beliefs and myths, and gives us the means of analysing the interrelationships between the moral and material factors in social life. To this day, the *Republic* remains the prototype of a social synthesis in the grand manner.

Social statics are by nature timeless; and the intellectual habits appropriate to the platonic constructs come easily enough to the western mind. After a period of moral anarchy there is inevitably some satisfaction in moving back into a lawful social universe where all phenomena are subject to meaningful functional analyses. If the matter of social synthesis could end where it actually begins, the task may not be too formidable. Indeed, the political climate of the modern world is in many respects growing platonic in its insistence on planning from above, strengthening of central powers, and universalizing of education.

The sad serenity that permeates the platonic construct on its many levels of meaning is anchored in the realization and acceptance of the fact that even the most perfectly conceived social equilibrium, when imposed on reality, will be insufficient to withstand the shocks that emanate from man and nature. The consciousness of the transitory nature of all social form permeates the great tradition, and leads in ever wider circles to contemplation of both the relativity and the uniqueness of historical events. The most mature minds of the tradition have become absorbed into the sphere of social dynamics, which is inseparable from the general process of social creation.

WE have called attention to the four primary survival functions that have to be met in all surviving societies. But with time societies have grown more diversified and more complex. Relative to each level reached, in a particular society, secondary survival functions are added to the primary ones, and become equally essential. (In fact, they are closely connected with those institutions and cultural values which politicians are fond of describing as "more precious than life itself.") They have to be incorporated into the general social equilibrium; once in existence these functions become part of the system of social statics—a process of integration repeated, as it were, on ever higher levels of social complexity. On the other hand, the birth of the new functions and their incorporation into the new equilibrium is essentially a matter for social dynamics.

In dealing with the process of pure change, much of which exists only as potentiality, we have to unlearn many things and acquire new habits of mind. The possibilities of misunderstanding and useless controversy are so great that one hesitates even to discuss the subject. The following remarks are intended only to suggest some of the lines of thought that the study of social dynamics are likely to follow. They are partly in the form of a warning.

Social statics deal essentially with form and with the conversion of the forms that now exist. Without the principles of statics we could imagine no society at all; they protect men and institutions against the anarchy of pure flux. But without dynamic principles there would be no growth, and lacking growth and renewal forms would become too brittle to withstand the shocks that are constantly generated in man and nature. In reality, survival depends upon a nice blending of the static and the dynamic, the actual and the potential, reason and emotion. Owing to the limitations of our intellectual habits, we are unable to study the dynamic in terms of pure process, and generally have to realize it as change in a static system already in existence.

The difficulty of maintaining an objective scientific attitude naturally increases as we move closer towards the burning issues of our own time and place. Analyses will have to throw light on processes centered in emotions and beliefs. The functional approach will throw new light on the social importance of religion and the processes of social growth that, *eo ipse,* must appear absurd to thinking dominated by the belief in automatic social progress. There will be less resistance to the resurrection of the platonic concepts than a new relevance of Christian, and other, religious process and belief.

Social dynamics represents a direct bridge to the universal. Hence, it is not likely to become popular in the present system of particularist values and forms. The student, however, has the satisfaction of being on the side of the future. He may also recall the words of Marcus Aurelius that "nothing is so conducive to greatness of mind as the power systematically and truthfully of testing everything that affects our life . . . in its relation and value to the universe, and particularly to man as a citizen of the supreme world-city, of which all other cities form, as it were, households."[1]

[1] Marcus Aurelius, *To Himself,* III, II.

# THE ELECTRO-ENCEPHALOGRAPH AND THE MIND

H. Tudor Edmunds

## An English Physician Reinterprets the Electric Field of the Brain

IN recent years a number of instruments have been invented with a view to detecting some of the finer forces emanating from the physical body in health and disease. Most of them have the drawback of having to incorporate a living person in the diagnostic circuit, thus introducing many variable and unknown factors. One of the most promising of these instruments which do *not* have this particular drawback, is the electro-encephalograph (usually referred to as E.E.G.).

It is well known that when living cells or groups of cells are functioning, they liberate minute electric currents, and the E.E.G. is used to pick up these currents from different parts of the living brain and record them automatically on a chart where they can then be studied at length. The method is a simple one, which consists of placing two electrodes on different parts of the subject's head, connecting them with a sensitive variometer, which then records the fluctuating difference of potential between the two points under examination.

As there are some ten thousand million cells in the brain giving out minute currents, the likelihood of the E.E.G. being of practical use seemed very remote in the early days, but as more and more people were examined it gradually became borne in on the investigators that four main brain currents[1] stood out beyond all others, and could be distinguished by their different frequencies.

The most pronounced of these was named the alpha rhythm, with a frequency of 8-13 per second. It has the unusual property of being a kind of scanning current, sweeping through the brain at regular short intervals while the area of the brain dealing with visual images is inactive, but the moment the eyes are opened and a pattern is seen, or when an image is visualized mentally, the current ceases. It seems as if the alpha current is always searching for pictures and that the scanning stops the moment a pattern is found. The alpha rhythm is thus associated with the *forms* of ideas and other images set up by the thinking brain, so that visual imagination and alpha rhythms are mutually exclusive.

No two people have exactly similar alpha rhythms, not even monovular twins, but in any one person the pattern is remarkably constant from year to year once cerebral maturity has been reached round about adolescence.

The differences between individuals are often very great, and the individual nature of E.E.G. records seems to be similar to that of fingerprints, in giving a simple means of identification. In this the brain is unique in being the first organ to furnish positive identification by its *behavior.*

Alpha rhythms have been a means of dividing people into three main groups:—

(1) those whose main method of thinking is by visual images;
(2) those of the opposite type, who cannot learn by visualization, and who think in abstract terms and qualities;
(3) those who are able to think in both ways.

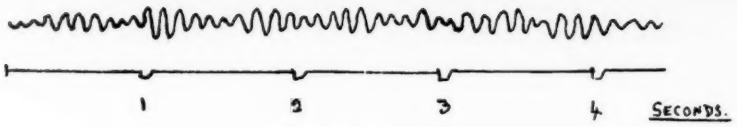
These characteristics are fundamental to the individuals concerned and have no relation to intelligence, nor is one superior to another; neither are they revealed by competitive examination. They help to explain why in conferences some people find it so difficult to understand one another, while others follow a trend of reasoning with the utmost ease. Members of the visual and abstract groups will always tend to misunderstand each other however sincerely they try to follow the other's point of view. It is quite likely that in the future the E.E.G. will be used in helping people to choose a career, for it is obvious that diplomats, statesmen, teachers and doctors, for example, will never be very successful if they do not belong to the third alpha group.

Of the other main rhythms less detail has been discovered so far. The slowest is the delta rhythm of ½-3½ vibrations per second. This is dominant in very early childhood, and also in sleep, and seems to indicate an absence of normal cerebration. For this reason it is only found in adults during waking periods in regions of the brain that are *not* functioning owing to compression, injury, or disease, thus giving the surgeon a very accurate means of localization in cases of brain tumor. Children with persistent delta rhythms are docile, malleable, and easily led or helped, since this rhythm indicates the infantile or inactive brain.

The fastest of the four main rhythms is the beta rhythm having a frequency of 14-30 per second, and is found in conditions of nervous tension, whether acute, or prolonged, as in anxiety states.

The remaining rhythm, called theta, is of 4-7 vi-

[1] I am indebted to *The Living Brain* by W. Gray Walter (Duckworth, 1953) for some of the more recent E.E.G. discoveries mentioned in this article.




Typical Alpha Rythm in a normal adult. (The frequency is constant and regular at about 10/sec, the changes in amplitude being due to variations in potential.)

brations per second and appears to be continuously searching for pleasure and pleasant sensations. When these are found it ceases, and when the pleasures cease it once more continues its search. It is not surprising therefore that the theta rhythm is commonly found in children and young people, and is well marked in older people with hedonistic tendencies.

During childhood the E.E.G. rhythms show gradually maturing characteristics of mental development, so that one can follow certain trends of character and watch them change as the child grows older. Thus, if in an adult the characteristic rhythms of childhood are found to persist, it will indicate the retention of childish behavior in that person, even though he may be resting at the time the E.E.G. is taken.

As the average person goes through life he acquires new characteristics which are added to his personality. These cause new patterns of brain activity, and bring about in their turn a change in the alpha rhythm, so that the E.E.G. can actually measure acquired differences of personality.

The superficial differences that are found between people in their E.E.G. records are usually differences of personality rather than intelligence, but when the differences are those of a distinct *pattern* it is found that the greater the complexity of pattern, the greater the intelligence, while a shorter and simpler pattern indicates a duller one. Pattern and not amplitude seems to be related to intelligence, and by studying the complexity of pattern in different individuals, outstanding personalities can easily be distinguished from the mediocre.

The E.E.G. thus provides a means of estimating differences of character by actual experiment, which can be checked and retested and cannot be altered by previous coaching as in the case of competitive examinations. Tendencies to violence and self-indulgence, and degrees of self-control can all be measured. Moreover, a person's true reaction-time can be gauged accurately while he is sitting quietly in a chair, without his knowing what is being done, and without his having to operate any apparatus with his hands or feet; neither can he alter it by an effort of will.

It would seem therefore that in the not distant future, the relations of brain currents to personality will be of use to psychologists in the routine preliminary examination of their patients.

SO far we have been dealing with minute electric currents set up in the brain during what might be called its normal, everyday functioning, and the relation of function to current pattern has tended to confirm the common biological view that the mind is a product of the brain, and that different brains *create* different characters and personalities. However, when investigating less common mental phenomena such as hypnosis, extrasensory perception, and telepathy, the E.E.G. shows certain discrepancies which cast serious doubt on this belief.[2] It is found that under hypnosis, when a subject's eyes are closed, but he is made to *believe* they are open, his E.E.G. is still that of closed eyes. Similarly if his eyes are open, and he is made to believe they are shut so that he acts as if he were blind, the brain still records that his eyes are not only open, but seeing! If the hypnotist induces a state of moderate or deep trance, the subject's brain does not register sleep, but shows him to be in a state of full or even heightened awareness of the hyptonist and any suggestions he may make. The inference would seem to be that the hypnotist succeeds in some way in by-passing the brain and establishing direct contact with the subject's mind, while the brain continues to record the actual physiological changes taking place, as if the hypnotist did not exist. In this way it is found that deep sleep produced by a hypnotist causes little or no effect on the E.E.G. rhythms, whereas normal sleep, or that produced by the action of an anesthetic on the *brain cells,* causes marked changes in the E.E.G. findings.

We are thus faced with a rather startling paradox, for if the mind is simply the product of the brain cells, then any change occurring in the one must be exactly related to a change in the other, for the function of an object cannot change unless the object

[2] See Bert E. Schwarz, Reginald G. Bickford and Waldemar C. Rasmussen, Mayo Clinic and Foundation, Rochester, Minn. *J. Nerv. Ment. Dis.* 122:564-574, 1955.

itself changes in some way. Yet the E.E.G. shows that the mind can be deluded while the brain continues to function normally. Similarly, when a person experiences extrasensory perception such as telepathy or clairvoyance, the E.E.G. records a normal functioning of the brain, and not what would be expected if these thoughts and visual pictures had been conveyed to the person's consciousness through the usual sensory organs via the brain. We are thus driven to the conclusion that the mind is separate from the brain and uses the latter as an organ of expression.[3]

To many this may seem a simple truism, but to the materialist it is a disturbing discovery, for it breaks down the walls of his citadel and shows him wide vistas of a non-material country of which he has hitherto been completely unaware. Moreover he is faced with the fact that if the mind with all its known potentialities is a separate entity from the brain, he must be prepared to accept the possibility of its having a separate existence at death and perhaps during sleep. If this is so, it would account for many unexplained phenomena such as the ability of some people in trance to describe events in distant continents at the moment they are occurring, and numerous other experiences of a similar nature that are beyond the scope of this article.

It would also explain why the great religious teachers of the world have always spoken of man as actually *being* a soul and *possessing* a temporary body as an instrument of experience, for they were probably not offering a hypothesis, but stating a fact of nature of which, in their greater wisdom, they were fully aware.

[3] See "Electro-Encephalography of Meta-psychological States," by Orlando Canavesio of Argentina, a paper delivered at the First International Conference of Parapsychological Studies, Utrecht, Netherlands, July 30-August 5th, 1953.

# THE WHY OF ARTS AND CRAFTS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I was telling a friend of mine recently about a project in Social Studies our 4th grade had just finished, and how much the children had enjoyed working on it. She rejoined that it probably was a lot of fun, but what use was it? Describing to her how we had integrated reading and research, writing, spelling, oral and written language, social studies and arithmetic, was not enough to convince her. She felt each of these areas could be taught by other, less time-consuming methods.

It *was* fun! Possibly, for that very reason, the facts and skills learned will be longer and better remembered. The element of fun, or play, in childhood is an essential for well-adjusted behavior. It provides the desired interest and motivation. The child unconsciously gains in self-direction and in the disciplines required in the learning process.

Doubts do inevitably arise regarding the so-called "frills" in education. Of what use are projects? Why do we need arts and crafts as an integral part of our curriculum? I believe that any person who recognizes the forces with which teachers must reckon cannot but admit that the values of such studies go far beyond the strictly cultural.

For example, I have a disturbed eleven-year old whose attention span is so short that he is unable to finish reading a single sentence or to stay with a new word long enough to find out what it is. This same boy, in a "fun" situation, reflects his fair I.Q. in his concentration span. Enjoyment brings about greater interest and, conversely, interest brings enjoyment. We need not concern ourselves with which comes first, but we do need to realize that school work need not be drudgery to be effective. Arts and crafts tap a source of interest, self-motivation, and self-direction on the part of the students that brings into being a gush of enjoyment, activity and learning.

The matter of *self*-motivation is of extreme im-

portance. A child who must be pushed or punished, coaxed or scolded—in other words, one who is motivated only by an outside authority—will not succeed in ratio to the need for this authority to be used. How much more successful, creative and happy in life is the child or person without fear or guilt, who moves by self-direction! How much farther they go than we can take them.

How can we better enhance and correct the concepts fostered by the two-dimensional world of movies and television than by the project method with its three-dimensional structuring? Depth must be actively experienced before it is understood. It cannot be imagined. Therefore, we cannot say to a child, "Imagine how it looks." We must provide for him an experience by active participation.

Water power is an example. The child reads about it, sees movies, discusses it, but rarely becomes physically involved with it. A faucet at home, a running brook, a quiet pool, or a white-capped lake all have meaning, but none really connected with the concept of water power. The child believes what he sees or is told but his understanding is vague; the principles involved are merely intellectually learned.

First-hand experiences can be given the children by a simple experiment in which they construct and harness a water wheel, and build their own home water system. In addition to achieving real insight into the meaning of water-power thereby, the children learn to work with a group, utilize the skills they know, and find reasons and motivation for learning new ones.

Often the hidden values of the project method are of more importance in children's lives than are the tangible ones. Ethical and spiritual values are learned, consciously or unconsciously. We are not born knowing these any more than we are born knowing how to talk.

In a puppet show my class gave recently, I found children who never gave a performance with the puppet as the performer. Their puppets never faced the other puppets. Such children cannot move out of themselves into the feeling of another. They are completely absorbed in themselves, too insecure and selfish to think of another's feeling. There are also those who do not participate in discussions—the on-lookers, non-participants. We need desperately the values inherent in the ability to put one's self in the place of others with sympathy and feeling.

Mildred Hardeman from the New School for Social Research has found that many of her adult pupils could not put themselves into an abstract situation in a meaningful way.* It was always someone else and not the "I" who was involved in a given situation. This was a complete denial of feeling, the personal relatedness in the form of an emotional impact.

We must face this problem in school and here again, art projects can be of value.

If my children should plan as a project the Navajo Indian and Sheep Herding, what would happen? They would make the environment as near to the real as possible—fantastic red mountains, deep canyons, sandy wastes of land. The little hogan home would be constructed; the Indian and his horse, his family, and his sheep would be placed appropriately. As the children work, they actually see how these others must live. They feel the sandiness and dryness of the desert, the desperate need for water. They understand these people and sympathize with the difficulties of their lives.

As Mildred Hardeman says, "Many psychologists have pointed to the fact that real learning, the kind that gets under the skin, is an activity of the whole organism."

This means, not just the child's thinking function, but that of *all* his senses. We have too much vicarious living and not enough actual experiencing in the world today. Good habits of living are not learned by experiencing once. What feels right must be felt over and over until the rightness becomes part of us and our own individual pattern.

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*See "A Note on the Personal Significance of Abstractions," by Mildred Hardeman, MAIN CURRENTS, March 1957, p. 89.

# IMAGINISM AND SCIENTIFIC THOUGHT

Raynor C. Johnson

Melbourne University

## A Consideration of "The Quantum Physical Basis of Life," by Andrew A. Cochran (May 1957 Issue of Main Currents)

I HAVE recently written[1] at length about the ideas of a little-known writer, Douglas Fawcett,[2] whose philosophy of "Imaginism," has (like that of Plato and others), something to say about the underlying orders of the sensory world which science is exploring. In brief, this view holds:

(a) The world is psychoid, a psychical continuum, to the upper levels of which we ascribe properties described by the term "mind," and to the lower levels properties which we describe by the term "matter." Being psychoid, there is inter-penetration throughout the continuum. The old materialistic physics was based on an abstraction of the metrical aspects of these lower levels from the greater whole. The rich qualitative variety of Nature with all its transformations finds a place in this continuum and need no longer be conveniently deposited and ignored in the observing mind.

(b) There are fundamental modes of Divine Imagining which we call imaginals. They are the modern successors, it may be said, of Plato's "Ideas." These are not apotheosised ideas *about* reality; they are the primary causal fountains of reality itself.

To illustrate, we may observe that the qualities which constitute hydrogen, carbon, or sodium, are none of them present in electrons or protons. A molecule of sodium chloride has properties which cannot be accounted for, or derived from, those of sodium and those of chlorine. Certain qualities disappear and certain other qualities appear when this molecular structure is able to manifest through the interaction of the lower atomic particles.

With this brief preliminary, I turn to consider Cochran's article. The first question he formulates is, "Are the forces of Nature controlled in an absolute way by forces which are external to matter, or in a relative way by forces which arise from within matter?" He favors the latter because the quantum laws appear to be more fundamental than classical laws, which are a limiting case of the former. The first thing to be said is that "matter" is a concept only. No one has seen matter, although we have all seen objects rich in qualities. The concept of "matter" arises only when we abstract from the whole the particular qualities of extension in space and resistance to motion. "Force" is another concept formulated in this sytem of abstractions to account for rate of change of position of matter in space, and so on. Referring to the above question, Mr. Cochran says, "When faced with such a choice, scientists must accept the simplest explanation which is consistent with *all* the known facts." I quite agree. The writer then continues, "Modern developments in quantum theory and relativity lead us to the tentative conclusion that the laws of the universe result from the nature of its fundamental particles, and that everything in the universe results from various permutations and combinations of the properties of these particles." Brave words! But they overlook the fact that quantum theory and relativity are conceptual schemes which account—not for *all* the known facts—but for a particular selection of these facts which physics has chosen to study. These facts are largely quantitative in character. Most of the qualitative aspects of the world fall outside its selected field, and therefore beyond its interpretation. We must not allow our enthusiasm for successful hypotheses in a restricted field of inquiry to persuade us that they hold within them the keys to complete metaphysical understanding. A. N. Whitehead[3] reminded us of this when he said, "If we confine ourselves to certain types of facts, abstracted from the complete circumstances in which they occur, the materialistic assumption expresses these facts to perfection. But when we pass beyond the abstraction, either by more subtle employment of our senses or by the requests for meanings and for coherence of thoughts, the scheme breaks down at once. The narrow efficiency of the scheme was the very cause of its supreme methodological success."

Mr. Cochran propounds a second question — whether the whole can be greater than the sum of

[1] *Nurslings of Immortality,* Raynor C. Johnson (Hodder and Stoughton, Ltd., 1957)

[2] *Divine Imagining,* E. D. Fawcett (Macmillan & Co., Ltd., 1921)
*Zermatt Dialogues,* E. D. Fawcett (Macmillan & Co., Ltd., 1931)
*Oberland Dialogues,* E. D. Fawcett (Macmillan & Co., Ltd., 1939)

[3] *Science and the Modern World,* A. N. Whitehead (Cambridge University Press, 1926)

its parts. He defends the negative answer. Speaking of the formation of water from hydrogen and oxygen, he says, "The chemical reaction involves a rearrangement of the outermost shell of electrons of hydrogen and oxygen, and this rearrangement produces a new combination of the basic properties of protons, neutrons and electrons, which we call water. Certain chemical and physical properties have changed, but this is merely because the parts have been rearranged." What are these "basic properties of protons, neutrons and electrons" which, by relative spatial reorientations, can cause certain atomic properties to disappear and very different molecular properties to appear? What logical connection is there between these two classes of events? Perhaps long familiarity with the empirical data has led some scientists to suppose that there is no problem here at all? These qualitative appearances and disappearances are basic to the world as we know it, and they have to be properly explained by any outlook which purports to understand the world. No one has ever supposed that electrons, protons or neutrons have color or scent or taste associated with them; but a greater whole, the atom, makes it possible for these properties to manifest. Certain large nucleo-protein molecules (called genes by biologists), have potentialities which are not present in their parts, but these molecules make it possible for transmissible qualities to manifest in the phenomenal world.

The *analytical* method of study used in science fails to disclose the truth of this, because by its nature it progressively leads back to those elementary entities which are the basic but not the adequate causes of these higher appearances. It is the basic fallacy of the materialist outlook to suppose that the higher can be "derived from" the lower. By "derived from" I mean "adequately explained by" or "causally accounted for." The qualitative richness of the world and its transformations have to be properly accounted for, and this has not been done by the abstract concept of matter in motion. The philosopher must apparently constantly reiterate that "it is no good tapping a cask for wine which is not there."

In further illustration Mr. Cochran says of an automobile, "It does not possess any basic property not possessed by its parts. . . . The auto is thus not more than the sum of its parts, but rather a combination of the sum of its parts, *selected by man's intelligence for his convenience*." In the words I have italicized is the denial of the very argument that it purports to support. The creative imagining of man added to the parts makes an all-important difference. In the result, something is there which has properties not possessed by any of the parts. A poem, for example, is vastly more than an aggregation of words, precisely because of the activity of the creator.

Mr. Cochran's position differs however from that of the old-fashioned materialist in that he is prepared to associate varying degrees of "life" with all levels of entities down to the humble electron and proton. (I would prefer the term "sentience," but I think we mean the same thing.) This is Whitehead's theory of Organism — and I agree with Mr. Cochran at this point. But—and here I have to differ again—he is prepared to contemplate the natural emergence of higher creatures, including man himself, from the intelligent self-ordering of these basic particles, now endowed with primitive life or consciousness. If the materials from which a rabbit is made are put into a hat, we are asked to believe that the live rabbit can subsequently be drawn from the hat! It is as unlikely as that if all the words of a poem were written each on a slip of paper and put in the hat, we could draw them out as a poem. There is no evidence whatever of the capacity of elementary sentients on one level to plan or attain a higher level. There is no evidence of simple addition of primitive consciousness by which wholly new powers become manifest. As well might we expect the thought of a thousand morons to add up to the wisdom of one highly intelligent man.

When I survey the account which Darwinism and its derivatives give of the evolution of living things from the Protozoa to Homo Sapiens, I am bound to say that the two themes of Variation and Natural Selection together with all the detailed knowledge which genetics is supplying, hold out great promise of accounting for the factors in evolution which derive "from below." I am equally clear that, regarded as the sole and sufficient basis of evolution they are completely inadequate. At every step there is apparent a purposive drive towards wider awareness and novel function. Some experiments were failures, now extinct. But something was learned and remembered through these experiments, as we can see from the significant fact that failures were not blindly repeated, and that successful devices were fully exploited.

We are told by Jordan that "living organisms must eventually be studied by means of the concepts of quantum physics for the reason that their entire behavior is directed from amazingly tiny centers which belong to the atomic realm." I am completely sceptical so far as such claims are concerned. We do not necessarily get any nearer to the understanding of an object by studying smaller and smaller parts of it. Indeed the kind of knowledge which we acquire by a process of progressive breakdown changes radically.

I shall make only brief comment on Bohr's suggestion that the dual aspects of the microcosm (particles and wave) are analogous to the dual aspect of the macrocosm (matter and mind). Both particle and wave are conceptual fiction, useful for limited purposes in a restricted field. Matter and mind are concepts in a wider field, in that they are abstractions from the physical reality. We must be careful of the conclusions which we draw in such a case.

May I express the hope that scientific men will weigh carefully the philosophical outlook which Fawcett has propounded. I believe it has fundamental importance for modern thought.

# LIFE AND THE WAVE NATURE OF MATTER – A REPLY

Andrew A. Cochran

DR. JOHNSON feels that the concept of "Imaginism" has many advantages over the concept of matter presented by my article in the May 1957 issue of this magazine. However, nowhere in his remarks does he cite any evidence which supports Imaginism, or make any mention that real supporting evidence exists. Although I am unfamiliar with Fawcett's work, it would seem that Imaginism is a speculative system which does not make contact with science substantially. For this reason, the truth of its concepts cannot be subjected to any experimental tests. A philosophical system, so produced, can soar where it will, for it is not bound by the necessity to adhere to the data of science.

Dr. Johnson proposes that consciousness arises from a source which is external to matter, but this source is not further defined or located. In effect, he merely states that, in his view, my propositions leave much to be desired. To any neutral observer, trying to decide the merits of both cases, it would seem that whatever authority the arguments might carry would depend in direct ratio upon their ability to develop some verifiable objective evidence. Otherwise a theory can only make its appeal on the grounds of inclination or sympathy.

My article admittedly involves speculation, but real evidence is developed in support of my hypothesis, which I believe justifies its serious consideration. By showing that the chemical elements basic to life have a high degree of wave nature (and that carbon, *the* basic element of life, has the highest degree of all the chemical elements) it relates the wave nature of matter closely to life. These new facts were arrived at by using heat capacity data for the chemical elements in conjunction with simple, well-established principles of quantum physics. Presently accepted theories can neither predict nor explain these two new facts.

My thesis has been that life and some rudimentary aspect of what we call consciousness when it appears in sentient forms can be traced to the wave nature of atoms and fundamental particles. To Dr. Johnson, this may seem like a new kind of materialism, but the question may well be asked, since matter is no longer "material" in the old-fashioned sense, what onus does this term now carry? It is not mechanism nor physicalism, for the fundamental particles, being associated with non-material energy, and operating within given boundaries, according to indeterminancy principles, cannot be thought of in terms of *mechanical* causality. It is just possible, in fact, that this new hypothesis which I am advancing will lead us to some real proof of the fundamental character of life and consciousness, something which we very much need to find out.

Although Dr. Johnson believes that atoms have a degree of consciousness, he ridicules the idea that the evolution of life could be due to forces arising *within* matter. However, recent research has made this idea very attractive. In *The Origin of Life* by George Wald, it is shown that the formation of complex substances from simple raw materials is much more probable than was previously thought. Wald describes experiments performed by Urey and Miller in which a mixture of water vapor, methane, ammonia, and hydrogen (all believed to have been present in the early atmosphere of Earth) were exposed to an electric spark. Analysis showed that a mixture of amino acids resulted. Glycine and alanine, the most prevalent amino acids in proteins, were present. Wald states, "The yield was surprisingly high. This amazing result changes at a stroke our ideas of the probability of the spontaneous formation of amino acids." And amino acids are the building blocks of living matter. Concerning the complexity of living matter, Wald says:

"What brought order into such complexes? For order is as essential here as composition. To form an organism, molecules must enter into intricate designs and connections; they must eventually form a self-repairing, self-constructing dynamic machine. For a time this problem of molecular arrangement seemed to present an almost insuperable obstacle in the way of imagining a spontaneous origin of life, . . . but it no longer seems insuperable. The change in view has come about because we now realize that it is not altogether necessary to *bring* order into this situation; a great deal of order is implicit in the molecules themselves."

Wald mentions several examples of the spontaneous formation of familiar types of complex biological structures by protein molecules in vitro. He concludes, "We have therefore a genuine basis for the view that the molecules . . . will not only come together spontaneously to form aggregates but in doing so will spontaneously achieve various types and degrees of order . . . What it means is that, given the right molecules, one does not have to do everything for them; they do a great deal for themselves."

The idea of the spontaneous formation of living things through a slow evolution is completely in accord with known facts. Wald states, "I think a scientist has no choice but to approach the origin of life through a hypothesis of spontaneous generation." The

new hypothesis is entirely consistent with Wald's views and with the recent evidence he summarizes.*

The wave theory of light and matter is based on interference and difraction experiments. My hypothesis, dealing as it does with wave nature, has also been used to propose a mechanism for interference and diffraction phenomena. After one additional assumption was made, this proposal was put into the form of a third prediction which can be checked by experiment. If these experiments are ever performed, a third test of the new hypothesis will result, within the limitation imposed by the additional assumption.

Each new revelation of quantum physics, from Planck's first conception of it, has seemed very strange and unorthodox to scientists. Why was this the case? Simply because they were thoroughly imbued with classical attitudes and concepts. As more and more new experimental facts stubbornly refused to fit the classical mold, it became apparent that classical theory is too limited to describe reality. We are still being hampered by our heritage, for the idea that atoms and the fundamental particles of matter are lifeless came directly from the classical view that a living organism is some kind of complicated machine which can be analyzed in terms of inanimate parts, just as a clock can be analyzed in terms of gears, springs, etc. The idea that atoms are lifeless is very firmly entrenched in modern thought. However, when this belief is critically examined, it is found that it is not based on any evidence. As thinking men, we need to ask ourselves why we retain a strong belief in an idea which has no supporting evidence.

I am sure that Professor Johnson and I will agree on one basic proposition: the extent to which a philosophy is connected with empirical evidence would be its major test, if the insight is to have appeal. The situation in our time has altered markedly from that which obtained in classical Greece. All kinds of new evidence for the non-material reality is available. The great need now is for a sustained and systematic accumulation of this material and its consistent treatment.

*George Wald, *The Origin Of Life*, The Physics and Chemistry of Life, Simon & Schuster, 1955, pp. 3-26. (A Scientific American book.)

# SOURCE READINGS: INTEGRATIVE MATERIALS AND METHODS

## Physics and Religion

THE September-October 1957 issue of *Religious Education* was devoted, in large part, to a symposium on the "Contributions of Various Disciplines to Theology and Religion." Of the five articles included, the first, by Ian G. Barbour, who is Chairman, Dept. of Religion and Associate Prof. of Physics, Carleton College, is "On the Contribution of Physics to Theology and Religion."

Barbour devotes himself to a consideration of whether the content and the methods of contemporary science are of theological significance. One of the most revolutionary innovations of modern physics is its description of atoms by probability-distributions instead of exact values of position, velocity, etc. The mechanistic determinism of classical physics is replaced by the Heisenberg Uncertainty Principle, and most physicists today believe that probability is irreducible and implies a break in detailed causality. Barbour questions the relationship of these probability features to human freedom, a sequence of thought which has been the subject of a good deal of speculation. Within physics, indeterminacy is treated entirely as a matter of chance, and therefore, to his mind, has little in common with freedom. Un-caused actions would be chaotic and random, not the result of responsible choice. Barbour suggests that a beginning should possibly be made from higher levels of life, since the integrated behavior of totalities or "gestalts" may require analysis in terms different from those specifying the activity of their constituent units. In this frame of reference, freedom is primarily self-determination. Therefore, in Barbour's view, the categories of physics would seem to have only limited applicability in the analysis of freedom.

The rise of astrophysics has renewed interest in the origin of our galaxy, now placed at about 4 billion years ago. There are two types of theories about the origin of the universe: instantaneous creation, and continuous creation. Although some writers hold that the theory of instantaneous creation is more consistent with the Christian view, Barbour does not favor either type of theory, since both push the creation process back to an unexplained situation where each leaves it.

"Though one assumes a beginning *in time* and the other an *infinite time* span, neither raises the question of God's creation *of time*. Cosmic purpose, with which science itself cannot deal, could be as well displayed by one process as by the other. . . . [Christian] insights are compatible with any scientific theory of *how* the details of creation were and are being accomplished."

Relativity has revised the classical conception of time as universal and destroyed the idea of absolute simultaneity, in favor of a time-space continuum. This, and the new concepts of space as revealed by non-Euclidean geometries, has raised metaphysical issues for philosophy and theology. Barbour cites several questions of interest, among them, Is the involvement of time in the world-process relevant to the theological statement that creation is not an event *in time?*

In addition to a consideration of the content of science, there are methodological implications. Investigators in several fields have noted that in the measuring process the role of the observer cannot always be completely neutral; frequently the experimental process itself affects the situation. The distinction between observer and observed breaks down; we deal with relations, not objects in themselves. Existentialist theologians have stressed the role of one's own involvement in any knowledge of God. Today, an understanding of the nature of a scientific theory and its relation to reality is seen to be a human enterprise, not a mechanical operation. The creative role of man's mind in inventing hypotheses is emphasized. Barbour points out that the symbolic nature of the language of science is pertinent to analysis of the symbolic character of theological statements, and that in both fields there is continual interaction of experience and interpretation.

In the abandonment of strict mechanism, one of the most important changes is the decline of reductionism. The concept of organism, which Whitehead developed so extensively, seems to be a more fundamental image of nature than the machine. There is thus a greater willingness to grant ontological status to factors occurring in higher levels of life and in human existence.

In Barbour's view, the attitudes and methodology of modern physics should be of interest to theologians, but the use of specific scientific theories in Christian apologetics suggests to him a shaky faith whose justification might hang on the latest issue of *Scientific Monthly*. To Barbour, God is primarily revealed through persons, not through nature. Yet a scientific study of nature reveals a design and order which has far-reaching implications even though for many this leads to a more impersonal Deity or Cosmic Force than the personal God of the Bible.

To the question of whether scientific method is useful in the field of religion, Barbour answers that it depends on how broad or narrow is the conception of scientific method. A middle position would see limitations in the applicability of scientific methods as well as significant parallels (e.g. the interaction of experience and interpretation in both fields). Application of scientific methods would also depend on theological position. The liberal, who emphasizes the *continuity* of science and religion, believes methods successful in one field are likely to be valuable in another, and sees the dangers in compartmentalization. The conservative, on the other hand, sees *discontinuity* and feels that the events important for man's redemption have little connection with the natural order, so that science has nothing to say to theology.

Finally, Barbour seeks to find a middle position between these extremes by recourse to the principle of complimentarity in physics, as when light behaves in some experiments as a wave, in others, as particles or quanta. The word "complimentarity" was used by Bohr to refer to the necessity of using sharply contrasting analyses, and extended to describe situations in which alternative models or sets of constructs for different aspects of the same phenomenon appear necessary.

"So also between science and theology we must avoid both reductionistic monism and unrelated dualism; each field abstracts aspects of total human experience. We need different *types of language* to express differing areas of experience. While the theologian need not base his religious faith *upon* scientific findings, he must clarify the place of the scientific enterprise *within* his system of belief as a unified world-view."

—*E. B. Sellon*

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## The Education of Scientists

HUGH Taylor of the Board of Editors of the *American Scientist* makes a plea for integration of subjects in the schools in order to build a firm base for specialization at higher levels and in order to serve the social and spiritual values.

In the January, 1957, issue of the *American Scientist* he made a survey of three score and ten years of scientific achievement in America. The issue commemorates the 70th anniversary celebration of Sigma-Xi-RESA, scientific versions of Phi Beta Kappa, which sponsor the magazine, and in it Taylor sums up the enormous scientific gains in America and compares us with the rest of the world. After pointing out our incredible technical advances and listing our all-time great men and Nobel prize winners, he comes to the question of ways to insure the future supply of scientific personnel.

"In the past generation the developmental effort rightly occurred at the college, university and postdoctoral levels. Today we must reach down into the ele-

mentary and the high school systems of the country to insure that an adequate potential of future scientists shall be at all times available. Five years hence, as the Society of Sigma Xi celebrates its Diamond Jubilee Year, it should be possible to determine whether a like measure of success has resulted in the schools to match that which the institutions of higher learning have already conspicuously achieved.

"With respect to the problems in the schools it is in the best tradition of The Society of Sigma Xi that the solution shall not be found in an increased measure of specialization. . . .

"The urgent need at the lower levels of the educational process is for a broad base upon which future specialization can securely rest. There is need too for integration between the sciences and the humanities and to this the scientist must contribute his share. 'Without the humanities,' writes Dr. Taylor, 'we would not be conscious of our history, we would lose our aspirations and the graces of expression that move men's hearts. The sciences express the creative urge in man to construct a universe which is comprehensible in terms of human intellect. Without this, mankind would find itself bewildered, in a world of natural forces beyond comprehension, victims of ignorance, superstition and fear.' This need for integration between the spiritual and the material aspects of life calls not for a narrow specialist training but for an educational process in which all the various disciplines contributory to the formation of a society dedicated not only to knowledge but also to wisdom shall prevail. The times call not only for an intensification of the training in mathematics and the sciences at the school and college levels but equally for a basic improvement in the teaching of all the fundamentals. Perhaps through a more penetrating effort in a more restricted range of subjects than has recently characterized the school curriculum, lies the better hope for scientists in the future who, in service of mankind at the material level, shall serve also the human spirit and social values."

The sensational events of the past few weeks, with the launching of the Russian satellite, have so firmly underlined our educational deficiencies, particularly as regards the teaching of science in high schools, that it is worth repeating and reemphasizing the remarks made in the *American Scientist* back in January. The mere fact that we know something is now going to be done about science education on a national level makes it important to heed Professor Rabi's plea that the sciences should be treated always as part of the whole fabric of human life and culture, and not merely as an area of narrow specialization. The enormous emphasis which is going to be placed on science in this country in the immediate future is fine and constructive. Yet there is danger implicit, that the science taught may be unrelated to its larger purposes, the service of man verifiably in the life of the mind itself—not merely the conquest of nature.

—*S. J. Nicholson*

## The Desperate Need for Synthesis

"In the last 300 years the progress of science has resulted in a fragmentation of knowledge into a series of compartments each of which can only be appreciated and understood by experts. . . . We are suspicious of all-embracing views of any kind. Limited horizons . . . are thought sufficient; a man should not concern himself with matters he does not have expert knowledge of. As a result the common ground held by people of different occupations has narrowed. . . . Western societies are uncertain of their aims, their beliefs, themselves. What is needed is a new integration of knowledge and belief . . . into a living faith which will again give people a feeling of wholeness. Perhaps, it is too soon for this to happen; and it may be that Western life will have to be eroded to its roots before it can be rebuilt."

—From *Science and Human Life,* by J. A. V. Butler

# NEWS AND NOTES

ACCOUNTS received, thus far, of the September meetings in Zurich of the second International Conference on Psychiatry add new evidence that professional men of the highest standing in psychology and in pharmaceutical and other branches of medicine are coming to see the need for a basic attack upon the central problem of our time: the relation of man to the orders of nature, and to the reality embracing both. This is not to say that the two thousand psychiatrists from some sixty nations all endowed their discussions with that significance. They are, after all, specialists. The fact that their study concerns a part of the human psyche and body does not guarantee breadth; over-specialization permits one to be as narrow-minded about the mind as it does about any other fraction of knowledge. The exceptional, or philosophical psychiatrists—men like Karl Menninger and C. G. Jung—are but the exceptions that prove the rule.

This dispute has bearing on the discussion of tranquilizers and energizers and, indeed, all the new pharmaceutical products intended to alleviate certain psychopathological states and still permit the patient to function. The question involved is but part of a larger, historic issue, now become the *only* issue of our times, buried inside current social, political, and economic problems. Why *only?* Because the ancient questions involved are now statable and therefore solvable; and because the other great attendant problems cannot be solved, only palliated, until this one question is consciously taken up by adequate methods, and shown to be in a fair way to solution.

When psychiatrists discuss tranquilizers and energizers they must assume that man is a physico-chemical system, or that he is not. Jung, of course, is not alone in saying that man is more; and one at least of the great pharmaceutical manufacturers is open-minded enough to doubt the validity of crass physicalism. That is why the great Ciba organization conducted in England, two years ago, an excellent inquiry into parapsychology. If the mind—i.e., the total emotional-psychic-logical potential—is a field force, then tranquilizers and energizers may be accommodations of a test object to a force field. The use of drugs, in ignorance of such a field, constitutes empirical fishing in the theoretical darkness. The windings and insulations in a motor are arranged in accordance with the field forces involved. What would we be entitled to think if a user of an electric motor decided to immerse it in a tank of cold water, in order to get cooler operation? It might seem simple to keep some classes of people under tranquilizers. But the prior question is: What is a human being? In what kind of field does he operate? Is the brain a (natural) test object in the mind's field?

It is clear that what we need most in this contemporary scene is an institution in which is concentrated the means to unite all valid knowledge, conceptual as well as factual, about *man as nature* (which means grasp of all natural orders) and about *man as man*, who can modulate and orchestrate such natural orders to new ends. There is, of course, no such institution, as yet, and no plans for one financed in the United States. (Prospects in Europe may be better.)

The problem, of course, is basic to education. Dr. Clarence H. Faust of the Ford Foundation group, said in *Humanism and Education in East and West*, "The greatest need of American education is the clarification of the relationships of the various philosophies it expresses. What is required is the investigation, on the one hand, of unexamined principles and values which play their role in the determination of educational practices, and the fuller investigation, on the other hand, of universal principles, values, and criteria, with a view to more detailed practical application of them. These, too, may be among the basic needs for the development of fuller mutual understanding between East and West."

This writer inquired by letter (1954) what the Fund for the Advancement of Education was doing about this problem, and was advised that in addition to the usual internal college self-study programs financed by the Fund (which have had so far only incidental bearing upon this matter), the interest of the Fund in the wider field of universal principles, values, and criteria was expressed in a grant from the Fund to the Institute for Philosophical Research, the Fund's work being then only in a preliminary or exploratory stage.

Since then great sums have been spent by that Fund, and others, but little, so far as we are aware, upon this centralmost need. Even the Bollingen Foundation, that publishes such valuable work in the general area of cultural heritage, seems to have no program that encompasses the most powerful coercive forces at hand—those of the sciences of nature. Yet an institute for integrative studies could operate today as readily as an institution like that for Advanced Studies in the Behavioral Sciences, whose studies seem primarily at the descriptive level.

Meantime, one American in every ten has to have institutional aid for mental and emotional disturbance; one in every eight has to have therapeutic help at home; family life is frightfully impaired; children murder parents; the educational system creaks and groans as it tries to process something about whose fundamental nature it is helpless or indifferent. Under the mushroom cloud, in the midst of society's confusion, disorders bred and flourish, and their root causes are unheeded save by the few.

—*F. L. Kunz*

# REVIEWS

## A Natural Science of Society

*CITADEL, Market and Altar,* by Spencer Heath, with a foreword by John Chamberlain, (The Science of Society Foundation, Inc., Baltimore, Md., 1957. 259 pages with appendix and index, $6.00) contains an outline of what is called socionomy, or what purports to be "the new natural science of society." In other words, it is an attempt to achieve a social synthesis that will agree with, and indeed utilize, the concepts and methods of approach of modern science. It represents another attempt by a layman to fill the vacuum in contemporary intellectual life created by the absence of any accepted academic theory on society as an operative whole with an organic place in the general evolutionary scheme of nature.

The author has been an engineer, lawyer, man of business, horticulturist, and a student of man and nature. In the ripeness of his years he summarizes his conclusions as to the nature of the social process and carries the vision into the future. It is a book written with warmth, vigor and clarity. But it is not a book easy to judge. One might be tempted to condemn it by faint praise without committing oneself. But this would be to miss something that is vital, and, I feel, likely to prove important.

It would be premature to attempt judging the likely impact of a book of this nature on the thought of society. It can be said, however, that it is typical of an important need of our time. Whether or not the particular innovations that it contains will prove to have survival value, it belongs at the frontier of thought and I believe, as Mr. Chamberlain does, that it contains many seed ideas that belong to the future.

It is rather unfortunate, therefore, that on the surface the book may be taken for simply another *apologia* for the free enterprise system, and the need for cutting down on the activities of governments and public bodies. According to Mr. Heath free enterprise should provide *public* as well as private services at a profit on an ordinary business basis. The voluntary organization of properties of all kinds into large production and service organizations he feels to be the prerequisite for healthy social growth. It is difficult to predict with certainty if, contrary to present trends, the state will, as Karl Marx also believed, tend to "wither away." But, says the author: "Silently and unobtrusively [the influence of the market upon the public sector, the citadel] offers for the administration of public affairs the exclusively social technique of exchange by *contract* and consent—in the further functional extension and development of the institution of property in land as the proprietary public agency and authority to maintain and exercise responsible supervision over the community servants and to give constructive administration to the public capital of the community, as it now unconsciously administers and distributes the community lands." (p. 202) Still, one doubts if the majority of present government functions could usefully be commercialized. It is also difficult, at least for this reviewer, to understand why the advance of civilization should depend on "rising [land] rents and permanent values on such a scale as few can now conceive." Such a Ricardian development, it seems, would be more likely to give new life to the old single-tax argument. The market—"where freedom's first gift is peace"—has, if present experience means anything, always tended to favor the rich and the strong at the expense of the poor and the weak. Hence, the picture of a world — however prosperous — dominated by the hierarchies of pious, bureaucratic, and profit-conscious super General Motors is hardly as alluring, at least to the majority, as the author sincerely seems to feel.

But the value of this work is fortunately independent of the author's gift in predicting future trends. Whatever the future may hold in store, it would be useful if social students would seriously consider Heath's stimulating approach to broad social concepts and social structure in general. The discussion is highly relevant to present attempts at social syntheses, and there is much to learn in the delineation of the basic social unit, the nature of a social structure, the relation between the dynamic and the static and the whole energy aspect of society in general.

Mr. Heath shows the usefulness of his approach particularly in dealing with population. By making population a function of births and average expectation of life he avoids many common mistakes, and deals with many practical problems in an illuminating way. He points in particular to the interesting change in population quality that automatically takes place with an increase in the average expectation of life. I am not convinced, however, that the author has not underestimated the danger of future over-population and that he has not overestimated the possibilities of increasing future living standards to levels that now must appear utopian.

The author's idealism is real, and his willingness and ability to deal with spiritual factors as an integral part of the social reality open a door towards the future. This is a book likely to be better understood by the young generation than by those already committed to the departmentalization and self-deceptive realism of modern social science.

—*John Lindberg*

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## The Significance of Variability

VARIABILITY of characteristics within the human species and its social and medical significance have concerned Prof. Williams for some years. His first book on this subject was *The Human Frontier* (1946) followed notably by *Free and Unequal* (1953). Both of these previous works primarily introduced and stated the problem of biochemical variability and charted its potential significance. The present work, *Biochemical Individuality,* by Roger J. Williams (New York, John Wiley, 1956, 214 pp., index, ref.), is a compilation of a

wide variety of data, giving documented support to his previous conjectures. The compilation is notable for its breadth of coverage of scientific disciplines within the biological and medical fields. There is no representation in the psychological field, perhaps because of the relative absence of standardized, reproducible procedures. The data, itself, is ofttimes surprising because of the tremendous variations which have been shown to exist in normal animals or humans.

In a study of anatomical features of a series of rabbits, it was observed that the weight of the spleen covered a twenty-fold range; whereas the hearts in the same animals varied over only a two-fold range in weight. A study of variations in weight of normal human pituitary glands reveals a range of 350 to 1000 milligrams. Williams has selected his material judiciously and emphasizes the point that there is all too little of this kind of information available today because of a tendency to search for means, averages and "normal" values. In spite of the adjective "biochemical" in the book's title, anatomical, pharmacological and clinical variations are cited in the text. There is also a discussion of the modern genetic basis for such variations. The combination of biochemical individuality and the genetic theories accounting for its existence is termed the "genetrophic concept" by Williams.

The purpose of this book seems to have been to establish the validity of biochemical variation at a time when generalization rather than "variation" is the rule of thought. However, it seems that this book may serve other purposes as well.

There is a continuing misconception that healthy individuals who conform to certain accepted patterns and social mores are "normal" and, therefore, are very similar to one another; or that individuals can be categorized into classes, usually based on some exterior criteria. These notions are convenient generalizations and are necessary to a degree for everyday, simplified communication. However, the use of such generalizations often leads us to overlook the fact that each individual has peculiar patterns and deviations, the sum of which is peculiar to that individual. As a result, we act in terms of the classifications and forget to treat others as the individuals which they are. This inevitably leads to confusion between the class into which an individual has been placed and the peculiar characteristics of the individual himself. Thus a problem of semantics in the use of the word "normal" is inherent in this study of variability.

Secondly, the availability of this evidence of individuality may serve to stimulate further investigations of the area. It will lead, hopefully, to greater sophistication in the art and science of medical practice. In a discussion of endocrine variation, Williams points out that our presently popular method of study ". . . involves studying a group of individuals from one standpoint, another from another standpoint, etc., but we almost never study the same individuals from many standpoints."

Finally, such a presentation may bring to a fuller realization the great potential that each individual has for the expression of a unique set of characteristics which are peculiar to him alone. This may lead eventually to a greater respect for the individual and increased personal and inter-personal understanding.

*—Kenneth E. Hurley*

## Towards Realism in Education

WISDOM and patience indicate that basic issues will ultimately emerge from discussion. Thus, after years of debate, two books have appeared which come to grips constructively with current problems in education.

The first is *Cultural Foundations of Education,* by Theodore Brameld (N. Y., Harpers, 1957, 322 pp., appendix, ref., index, $5.00). Dr. Brameld evidences a scholarly, yet humane, grasp of the anthropology, psychology, sociology and philosophy of culture. As a source book in these areas, his work offers a valuable example of integration in the social and behavioral sciences. Yet, throughout the presentation of material in these fields, the author never neglects to return frequently to his theme—education in its cultural context. The "Three Great Problems of Education and Culture," which concern human order, human process, and human goals, are discussed in a manner characterized correctly by Clyde Kluckhohn as "an impressive counter-attack upon the intellectual celibacy of the contemporary world."

In Part V, a "Study of Culture in Teacher Education," Dr. Brameld reaches the heart of the matter: "One purpose of this book has been to anticipate the kinds of (1) general education, (2) subject matter, (3) methodology, and (4) unified theory that a reconstructed policy will have to incorporate if teaching is ever to attain the standards outlined here." These four areas are carefully considered. The author indicates his belief that general education requires a principle of integration between the humanities and the sciences, and suggests that cultural order can provide such a principle. A unifying theory, in his view, would include the history and philsophy of education, in an effort to "bring education back into the mainstream of the human quest—a quest for emancipation from ignorance, superstition, deprivation, and slavery."

The second significant book is *A Fourth of a Nation,* by Paul Woodring (N. Y., McGraw-Hill, 1957, 243 pp., notes, index, $4.50). Nowhere during the entire debate on education has so much clarity, perception and frankness been displayed as in this much-discussed book. Its chapters on "the classic thesis" and "the pragmatic anti-thesis," which represent the principal arguments, are especially important.

The book is devoted mainly to the expression of an educational philosophy both realistic and practical. Woodring points out that the aims of education can be stated in a single phrase: "In a society of free men, the proper aim of education is to prepare the individual to make wise decisions. All else is but contributory."

Dr. Woodring recommends a thorough revision of our school system, from kindergarten through college. This may seem drastic, but it may constitute the breaking of an old mold into which new material could not well be cast. There can be no arguing the fact that if this nation is to educate one-fourth of its population, while steering its course in a world of revolutionary change, some drastic revisions in the process are in order. One may hope that these new appraisals and proposals will help to restore a sense of purpose and direction to education.

*—Harvey W. Culp*